



17503

14115

3 Hours/100 Marks

Seat No.

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- Instructions :** (1) **All** questions are **compulsory**.
(2) Answer **each** next main question on a **new** page.
(3) Illustrate your answers with **neat** sketches **wherever** necessary.
(4) Figures to the **right** indicate **full** marks.
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MARKS

1. A. Attempt **any three**. **12**
- a) Define design period. State factors affecting it.
 - b) Enlist various surface and subsurface sources of water.
 - c) State methods of aeration. Explain any one method with sketch.
 - d) Explain principle of coagulation.
1. B. Attempt **any one**. **6**
- a) State significance of ground water recharge. Explain any one method of GWR.
 - b) State different advance water treatment methods. Explain any two methods with sketch.
2. Attempt **any four**. **16**
- a) Draw flow diagram of water supply scheme from source to consumer. Mention one function of each unit.
 - b) What is Jar test ? State its significance.
 - c) Explain procedure of defluoridation technique.
 - d) State measures for prevention of pollution of bores and well waters.
 - e) Explain working of flushing cistern with sketch.
 - f) State significance rain water harvesting. Explain any one method of it.
3. Attempt **any four**. **16**
- a) Explain E-coli test with significance.
 - b) Explain with neat sketch rapid sand filter.
 - c) State principles of building sanitation.
 - d) Explain principle of recycle and reuse of domestic waste.
 - e) State factors affecting sewer design.

P.T.O.

4. A. Attempt **any three**.

12

- State different types of valves in water supply. Explain working of any one valve with sketch.
- Explain working of two pipe system of plumbing with sketch.
- Explain necessity of intercepting trap with sketch.
- State norms for maintenance of domestic sanitary units.

4. B. Attempt **any one**.

6

- Determine population in 2011.

Year	1951	1961	1971	1981	1991
Population	36,000	39,000	44,400	55,000	56,500

Use decrease rate of growth method.

- Define following terms.
Sewage, Sullage, Garbage

5. Attempt **any four**.

16

- State steps in laying of sewers. Explain any two steps.
- What is BOD ? Explain any one method of measurement of BOD.
- Explain aerobic and anaerobic decomposition.
- State any four norms of Maharashtra Pollution Control Board.
- Explain working of activated sludge process with sketch.

6. Attempt **any four**.

16

- Draw labelled sketch of Grid-iron system.
 - State factors affecting selection of pipe materials. Mention types of pipes.
 - Explain drop man hole with sketch.
 - Explain with sketch trickling filters.
 - Explain working of oxidation ditch with sketch.
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